02-24-09

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)			
		Application Number	10/081,419
		Filing Date	Feb 22, 2002
		First Named Inventor	Williams, Dwight P.
		Art Unit	3752
		Examiner Name	Ganey
Total Number of Pages in This Submission		Attorney Docket Number	50051

ENCLOSURES *(Check all that apply)*

- [ ] Fee Transmittal Form
- [ ] Fee Attached
- [ ] Amendment / Reply
- [ ] After Final
- [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
- [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
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- [ ] CD, Number of CD(s) _____
- [ ] Landscape Table on CD
- [ ] After Allowance communication to TC
- [X] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [X] Other Enclosure(s) (please identify below):

Response to Notification of Non-Compliant Appeal Brief

Remarks

It is believed that no further request for extension of time or fees are due. Notwithstanding, the Commissioner is authorized to charge any additional fees incurred or credit any overage to Deposit Account No.50-1753 (50051). Please regard this as a further request for extension of time to the extent one is needed. (Customer Account Number 22929).

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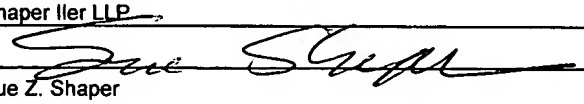
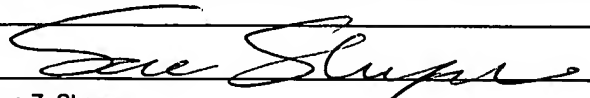
Signature			
Printed name	Sue Z. Shaper		
Date	February 23, 2009	Reg. No.	31663

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage via Express mail # EM 225839414 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature			
Typed or printed name	Sue Z. Shaper	Date	February 23, 2009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Williams	
Application No.: 10/081,419	Art Unit: 3752
Filed: 2/22/2002	Examiner: Ganey
Title: Around-the-Pump Additive System for Industrial Scale Hazards	
Attorney Docket No.: 50051	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO

ORDER OF THE BOARD OF PATENT APPEALS AND INTERFERENCES

MAILED 1/9/2009

And

NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

MAILED 1/29/2009

In Response to the above referenced Order and Notification, please amend the Appeal Brief to include the attached amended Summary of Claimed Subject Matter. Within this Summary of Claimed Subject Matter claim 17 is mapped to the specification by page and line number. (Applicant apologizes for the omission of claim 17. In melding the map into the Summary, for reasons unknown, claim 17 was inadvertently omitted.)

Please also amend the Appeal Brief to substitute the attached new Evidence Appendix cover sheet and associated evidence, the cover sheet containing a statement setting forth where in the record the evidence was entered by the Examiner.

2/23/9
Date

Respectfully Submitted,

Sue Z. Shaper
Attorney/Agent for Applicant(s)
Reg. No. 31663

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(v) Summary of Claimed Subject Matter

Background

Clarification of Distinction between "Standard Pumps" and "Fire Fighting Pumps."

One of ordinary skill in the pertinent art would understand and appreciate a distinction between "standard pumps having no 2½ inch inlet" and typical "fire fighting pumps." To substantiate that this is a recognized distinction among those of ordinary skill in the pertinent art, applicant submitted (with the above referenced Submission and Amendment after Final under §1.116) a copy of NFPA 1901 Standard for Automotive Fire Fighting Apparatus Regulations as well as a website printout from a large "standard pump" rental agency, "Rain for Rent." Both are attached in evidence appendix. It seemed advisable to show that a distinction between "standard pumps having no 2½ inch inlet" and "fire fighting pumps" could be substantiated among material publicly available. The Regulations and the website are both matters of public knowledge, publicly accessible records.

Firefighting pumps are constructed to meet NFPA 1901 Standard for Automotive Fire Fighting Apparatus Regulations, a copy of relevant portions of which is attached in the evidence appendix. Firefighting pumps are to include a 2½ inch, or "pony," inlet on the suction side of the pump. (Fire fighting Regulations 1901-45, ¶ 16.6.3 and 16.6.3.1.) The Regulations require that at least one valved intake be provided that can be controlled from the operator's position, and 2½ inch is the standard size for what is referred to in the industry as the "pony inlet." The 2½ inch "pony" inlet is used for running an "around-the-pump" system in order to add foam concentrate to the water. The around-the-pump system diverts a small amount of water from the discharge side of the pump through a foam concentrate uptake system, such as a jet pump, and back to the suction side of the pump, hence the name "around-the-pump" system. By such means foam concentrate is introduced into the water supply.

Further, fire fighting pumps of 2000 gpm or greater have a water intake manifold typically providing for two or more 6" water lines. See Table 16.7.1 in attached Regulations 1901-45. The specification discusses the construction of fire fighting pumps on page 1 line 25 through page 2 line 8.

As applicant uses the phrase, "standard" pumps or "general purpose" pumps to refer to pumps that have a water inlet but no pony inlet, no special 2½ inch inlet." Such standard pumps rated for at least 2000 gpm and with a water manifold inlet are commonly found at an industrial site (where there is a fire.) See specification page 2 lines 17 through 25.

To confirm the existence of "standard pumps" without a "pony inlet," attached to the submission in the evidence appendix is a print-out from a website of "Rain for Rent," a pump rental operator. Applicant's attorney called the "Contact Us 800 number" of Rain for Rent, as indicated in the submission, and inquired whether any of the 34 pumps illustrated on the website provided a 2½ inch inlet

on the suction side of the pump. "Daniel," to whom applicant's attorney was referred with this question, said none of the pumps provided such a 2½ inch inlet. The pumps came with inlet manifolds but none provided a 2½ inch inlet.

The distinction between such "standard pumps" and "fire fighting pumps" is made in the specification. See spec p1 line 25 through p2 line 8.

Problem to be Solved

Fighting industrial fires frequently entails drafting water, typically from a reservoir, using line(s) to communicate the water to the hazard and entails assembly of a source of additive (paradigmatically foam concentrate) with a fire fighting pump in an around-the-pump take-up system. The pump must pressure the water as well as the around-the-pump additive system. See spec p1 lines 13-38.

It had been assumed that running an around-the-pump system required a specifically outfitted fire fighting pump with a pony inlet. See spec p2 line 6 through line 8.

Emergencies can arise, however, when the necessary equipment is all available except for a the special fire fighting pump with the pony inlet. It would not be unusual for appropriately sized "standard pumps" without a "pony inlet" to already be at the site. See spec p1 lines 9-25.

The instant invention teaches providing a fitting such that an appropriate "standard pump" could operate an around-the-pump system. In appropriate circumstances, this could save time, money and the environment. See spec p2 lines 17-25.

Map of Each Independent Claim to the Specification by Page and Line Number and to the Drawings, if Any

1. A fire fighting system comprising:

(Including both prior art and inventive system, see essentially all of the specification, i.e. P1 L5 - P11L7, and all Fig.s 1-5.)

pumping at least 2000 gpm water from a large water reservoir (R,W) toward an industrial hazard (Tank Farm)

(Including both prior art systems and inventive system, see: P1L13 – 29; P2L29 – P3L6; P3L23 – 38; P4L1 – 30; P5L3 – 13; P6L24 – P7L4; and Fig.s 1 – 5.)

using a standard pump (P of Fig.s 2 - 5) having a water manifold inlet (F2 of Fig. 2, F4 of Fig. 3, not labeled in Fig.s 4 - 5) but no special approximately 2 ½ inch inlet (no SF of Fig. 1); and

(For "non-standard pumps" of prior art systems, for contrast, see: P1L33 – P2L8; P5L3 – 13; Fig. 1, especially "SF" of Fig. 1 for illustration of "special approximately 2 ½ inch inlet.")

(For "standard pump," see: P2L9 – 25; P5L22 – 39; P6L24 – P7L4; Fig.s 2 – 5. Note: no "SF" of Fig. 1.)

adding, in an around-the-pump system, at least one water additive (A) from a water additive source (S) to the pumped water

(Including both prior art systems and inventive system, see: P1L30 – P2L5; P2L29 – 35; P4L31 - P5L2; P5L14 – 21; P6L24 – P7L4; Fig.s 1 - 5.)

through a fitting (FS) at least initially separate from the standard pump (Pof Fig.s 2 - 5), the fitting established on a suction side of the pump (P of Fig.s 2 - 5) upstream of the pump water manifold inlet (F2 of Fig. 2, F4 of Fig. 3, not labeled in Fig.s 4 - 5) and in fluid communication between a reservoir (W, R) outlet and the suction side.

(See P2L21 – 25; P2L32 – P3L6; P6L1 – 23; Fig.s 2 – 5.)

9. A fire fighting system, comprising;

(Including both prior art and inventive system, see essentially all of the specification, i.e. P1 L5 - P11L7, and all Fig.s 1-5.)

a large water reservoir (W, R);

(Including both prior art systems and inventive system, see: P1L13 – 29; P2L29 – P3L6; P3L23 – 38; P4L1 – 30; P5L3 – 13; P6L24 – P7L4; and Fig.s 1 – 5.)

an at least 2000 gpm standard pump (P of Fig.s 2 - 5) having a water manifold inlet (F2 of Fig. 2, F4 of fig. 3, not labeled in Fig.s 4 - 5) but no special approximately 2 ½ inch inlet (no SF of Fig. 1);

(For "non-standard pumps" of prior art systems, for contrast, see: P1L33 – P2L8; P5L3 – 13; Fig. 1, especially "SF" of Fig. 1 for illustration of "special approximately 2 ½ inch inlet.")

(For "standard pump," see: P2L9 – 25; P5L22 – 39; P6L24 – P7L4; Fig.s 2 – 5. Note: no "SF" of Fig. 1.)

a source (S) of water additive (A); and

(Including both prior art systems and inventive system, see: P1L30 – P2L5; P2L29 – 35; P4L31 - P5L2; P5L14 – 21; P6L24 – P7L4; Fig.s 1 – 5.)

a fitting (FS) at least initially separate from the pump (P of Fig.s 2 - 5) and attached between and adapted for fluid communication with

1) a reservoir (W, R) outlet and a suction side of the pump (P of Fig.s 2 - 5) and

2) the water additive (A) source (S) and the suction side of the pump (P of Fig.s 2 - 5)

wherein the fitting (FS) is established on a suction side of the pump (P of Fig.s 2 - 5) upstream of the pump water manifold inlet (F2 of Fig. 2, F4 of Fig. 3, not labeled in Fig.s 4 - 5).

(See P2L21 – 25; P2L32 – P3L6; P6L1 – 23; Fig.s 2 – 5.)

16. A fire fighting system, comprising;

(Including both prior art and inventive system, see essentially all of the specification, i.e. P1 L5 - P11L7, and all Fig.s 1-5.)

a large water reservoir (W, R);

(Including both prior art systems and inventive system, see: P1L13 – 29; P2L29 – P3L6; P3L23 – 38; P4L1 – 30; P5L3 – 13; P6L24 – P7L4; and Fig.s 1 – 5.)

an at least 2000 gpm standard pump (P of Fig.s 2 - 5) having a water manifold inlet (F2, F4) but no special approximately 2½ inch inlet (no SF of Fig.1);

(For "non-standard pumps" of prior art systems, for contrast, see: P1L33 – P2L8; P5L3 – 13; Fig. 1, especially "SF" of Fig. 1 for illustration of "special approximately 2 ½ inch inlet.")

(For "standard pump," see: P2L9 – 25; P5L22 – 39; P6L24 – P7L4; Fig.s 2 – 5. Note: no "SF" of Fig. 1.)

a source (S) of water additive (A); and

(Including both prior art systems and inventive system, see: P1L30 – P2L5; P2L29 – 35; P4L31 - P5L2; P5L14 – 21; P6L24 – P7L4; Fig.s 1 – 5.)

means (FS) separate from the pump (P of Fig.s 2 – 5)for connecting an around-the-pump additive supply line with the suction side of the pump, the connecting means established on a suction side of the pump upstream of the pump water manifold inlet (F2 of Fig. 2, F4 of Fig. 3, not labeled in Fig.s 4 - 5).

(See P2L21 – 25; P2L32 – P3L6; P6L1 – 23; Fig.s 2 – 5.)

17. A fire fighting system, comprising;

(Including both prior art and inventive system, see essentially all of the specification, i.e. P1 L5 - P11L7, and all Fig.s 1-5.)

attaching at least one line for fluid communication of water from a large reservoir (W, R) to an at least 2000 gpm standard pump (P of Fig.s 2 – 5) having a water manifold inlet but no special approximately 2½ inch inlet (no SF of Fig. 1);

(Including both prior art systems and inventive system, see: P1L13 – 29; P2L29 – P3L6; P3L23 – 38; P4L1 – 30; P5L3 – 13; P6L24 – P7L4; and Fig.s 1 – 5.)

(For "non-standard pumps" of prior art systems, for contrast, see: P1L33 – P2L8; P5L3 – 13; Fig. 1, especially "SF" of Fig. 1 for illustration of "special approximately 2 ½ inch inlet.")

(For "standard pump," see: P2L9 – 25; P5L22 – 39; P6L24 – P7L4; Fig.s 2 – 5. Note: no "SF" of Fig. 1.)

attaching at least one around-the-pump line for fluid communication of output from a discharge side of the pump (P of Fig.s 2 – 5)to a suction side of the pump (P of Fig.s 2 – 5);

(Including both prior art systems and inventive system, see: P1L30 – P2L5; P2L29 – 35; P4L31 - P5L2; P5L14 – 21; P6L24 – P7L4; Fig.s 1 – 5.)

attaching at least one fitting (FS) providing for fluid communication through the around-the-pump line to the suction side of the pump (P of Fig.s 2 – 5) wherein the fitting is established on the suction side of the pump upstream of the pump water manifold inlet (F2 of Fig. 2, F4 of fig. 3, not labeled in Fig.s 4 - 5).

(See P2L21 – 25; P2L32 – P3L6; P6L1 – 23; Fig.s 2 – 5.)

Concise Explanation of the Invention of the Independent Claims.

Independent claims 1, 9, 16 and 17 recite (in relatively analogous method and apparatus terms):

(1) a large water reservoir R or W; (Fig 2, 3, 4)

(2) pumping at least 2000 gpm (or a pump P therefor); (Fig 2-5)

(3) a standard pump P (Fig 2-5) having a water manifold inlet F2, F4 but no special approximately 2.5 inch inlet (such as SF of prior art Fig 1, such as dictated by Regulations NFPA 1901), and

(4) a "fitting" FS (or means having the structure of a fitting FS.) (Fig 2-5)

Claims 1, 9 and 16 further recite that the fitting is

(5) "at least initially separate from the pump."

All claims recite such fitting

(6) "established on the suction side of the pump upstream of the pump water manifold inlet F2, F4." (Fig 2-5)

The fitting is in fluid communication between the reservoir and the pump suction side. (Fig 2-4)

To summarize key limitations for this appeal, all four independent claims recite (3) "a standard pump having a water manifold inlet but no special approximately 2½ inch inlet," as well as (1) a large water reservoir and (2) pumping at least 2000 gpm. All recite (4) a fitting (or means) (6) "established on the suction side of the pump, upstream of the pump water manifold inlet" for running an around-the-pump system. Claims 1, 9 and 16 further recite that (5) the fitting is at least initially separate from the pump. "Initially," read in light of the specification, should connote "prior to the hazard."

These limitations will be referenced below in the Argument.

There is one means plus function claim limitation. This is the last limitation of claim 16. Structure corresponding to the "means" of claim 16 is fitting FS, illustrated in Figures 2, 3, 4 and 5 and discussed on p5 line 22 to p6 line 23.

Person of Ordinary Skill in the Art

The person of ordinary skill in the art would be an industrial fire fighter with five or more years of

experience. A typical industrial fire fighter has not completed any advanced engineering education nor has any experience in the manufacture of pumps.

(ix) EVIDENCE APPENDIX

The following Webster's Dictionary definition of "system," printout from Rain for Rent internet with conversation notes, and excerpts from NFPA 1909 Standard for Automated Fire Apparatus 2003 edition were included in the Response After Final mailed 8/18/06. Applicant submits they were entered. The Examiner did not check the box stating that they were not entered, and the Examiner's Answer, page 3, and Response to Argument Section, page 11, refer to the Evidence submitted in the Response After Final.

Library of Congress Cataloging in Publication Data
Main entry under title:

Webster's II new Riverside university dictionary.

1. English language—Dictionaries. I. Riverside Publishing Company. II. Title: Webster's two new Riverside university dictionary. III. Title: Webster's 2 new Riverside university dictionary.
PE1625.W244 1984 423 83-3799
ISBN: 0-395-33957-X (thumb index, trade edition)
0-395-37928-8 (high school edition)

Manufactured in the United States of America

Table of

p of organized crime figures working to
l gambling. 2. An agency that sells arti-
ıber of newspapers or periodicals simul-
tion, or jurisdiction of a syndic or body
-cat·ed, -cat·ing, -cates. —vt. 1. To
To sell (e.g., an article) through a syndi-
organize a syndicate.
[Gk. *sundromé*, concurrence of *symp-*
nein, to run.] 1. A group of signs and
dicate or characterize a disease, psycho-
normal condition. 2. a. A complex of
stence of an undesirable condition or
characteristic behavior pattern. —syn·
adj.
ē) n. [Lat. < Gk. *sunekdokhē* < *sunek-*
-, with + *ekdekhesthai*, to understand
take).] A figure of speech by which a
for a less inclusive term or vice versa,
for a police officer. —syn'ec·doch'ic
'i·cal *adj.*
var. of SYNOECIOUS.
ē) n. The study of the environmental
nmunities of organisms. —syn'ec·o·
ɔg'i·cal *adj.*
·e·sis (sĭ-nĕr'ĭ-sĭs) n., *pl.* **-ses** (-sēz')
iresis < *sunairein*, to draw together
ike.] 1. The drawing together into one
wels ordinarily pronounced separately.
uid component of a gel.
) n. [NLat. *synergida* < Gk. *sunergos*,
RGISM.] One of two small cells lying
ıbryo of a seed plant.
ı. [NLat. *synergismus* < Gk. *sunergos*,
+ *ergon*, work.] 1. The action of two
ɔr organisms to achieve an effect (of
ncapable. 2. The theological doctrine
ɔy a combination of human will and
(-jĭz'ĭk), **syn·er·gic** (sĭ-nûr'jĭk) *adj.*
An adherent of theological synergism.
ance. —syn'er·gis'tic, **syn'er·gis'ti·**
adv.
ies. SYNERGISM 1.
unesis, understanding < *sunienai*, to
hienai, to send.] A construction in
r but agrees in meaning with the word
rives, tell them to wait.
s·the·sia (sĭn'ĭs-thē'zhə) *n.* [SYN- +
n in which one type of stimulation
r, as the hearing of a sound resulting
ization of a color. —syn'es·thet'ic
ar. of SYNIZESIS.
(THETIC) + FUEL.] A liquid, gaseous
ived from naturally occurring fossil
ısion of two gametes. —syn·gam'ic
ıg'gə-məs) *adj.*
Sexual reproduction. —syn'ga·met'
sis (sĭn'ĭ-zē'sĭs) *n., pl.* **-ses** (-sēz')
is < *sunizein*, to collapse : *sun-*, to
.] 1. Contraction of two syllables into
ɔn two adjacent vowels. 2. *Biol.* The
hromatin contracts into a mass at one
ē-ɔn) n. [SYN- + Gk. *karuon*, nut.]
immediately after fusion of the male
-on'ic (-ŏn'ĭk) *adj.*
: *synodus* < Gk. *sunodos*, meeting :
1. A council of churches or church
ısembly. —syn'od·al (sĭn'ə-dəl) *adj.*
ɔ syn·od·ic (-nŏd'ĭk) *adj.* 1. Relat-
synod. 2. Relating to the conjunction
val between two successive conjunc-
with the sun. —syn·od'i·cal·ly *adv.*
·ious (sĭ-nē'shəs) *adj.* [SYN- +
ıale and female organs in the same
: *sinonyme* < Lat. *synonymum* < Gk.
nymous.] 1. A word having a mean-
: same as that of another word in the
pression accepted as a figurative or
word or expression. 3. *Biol.* A taxo-

r ĕ pet ē be hw which ī pie
ô paw, for oi noise ŏŏ took

ɔnic name of an organism that is equivalent to or has been superseded by another designation. —**syn'o·nym'ic** (-nĭm'ĭk), **syn'o·nym'i·cal** *adj.* —**syn'o·nym'i·ty** (-nĭm'ĭ-tē) *n.*
syn·on·y·mist (sĭ-nŏn'ə-mĭst) *n.* One who studies or discriminates synonyms.
syn·on·y·mize (sĭ-nŏn'ə-mīz') *vt.* **-mized, -miz·ing, -miz·es.** To provide or analyze the synonyms of (a word).
syn·on·y·mous (sĭ-nŏn'ə-məs) *adj.* [Med. Lat. *synonymus* < Gk. *sunônumos* : *sun-*, same + *onoma* name.] Expressing the same or nearly the same meaning as another word. —**syn·on'y·mous·ly** *adv.*
syn·on·y·my (sĭ-nŏn'ə-mē) *n., pl.* **-mies.** 1. The quality or state of being synonymous. 2. Study and classification of synonyms. 3. A list, book, or system of synonyms. 4. A chronological list or record of the scientific names applied to a species and its subdivisions.
syn·op·sis (sĭ-nŏp'sĭs) *n., pl.* **-ses** (-sēz') [LLat. < Gk. *sunopsis*, general view : *sun-*, together + *opsis*, view.] A brief outline or statement of a topic : ABSTRACT.
syn·op·size (sĭ-nŏp'sīz') *vt.* **-sized, -siz·ing, -siz·es.** [LGk. *sunopsizein* < Gk. *sunopsis*, general view. —see SYNOPSIS.] To give or write a synopsis of (a topic).
syn·op·tic (sĭ-nŏp'tĭk) *also* **syn·op·ti·cal** (-tĭ-kəl) *adj.* 1. Of or being a synopsis. 2. Presenting an account from the same viewpoint. —Used esp. of the first three Gospels of the New Testament, which correspond closely. 3. Involving or presenting data on atmospheric and weather conditions over a broad area at a single given time. —**syn·op'ti·cal·ly** *adv.*
syn·os·to·sis (sĭn'ŏs-tō'sĭs) *n., pl.* **-ses** (-sēz') [SYN- + Gk. *osteon*, bone + -OSIS.] Fusion of two bones. —**syn'os·tot'ic** (-tŏt'ĭk) *adj.*
syn·o·vi·a (sĭ-nō'vē-ə) *n.* [NLat.] A clear, viscid lubricating fluid secreted by membranes in joint cavities, sheaths of tendons, and bursae. —**syn·o'vi·al** *adj.*
syn·o·vi·tis (sĭ'nə-vī'tĭs) *n.* [SYNOV(IAL MEMBRANE) + -ITIS.] Inflammation of a synovial membrane.
syn·sep·al·ous (sĭn-sĕp'ə-ləs) *adj.* Gamosepalous.
syn·tac·tics (sĭn-tăk'tĭks) *n.* [< SYNTACTIC.] (*sing.* or *pl. in number*). The branch of semiotics that deals with the formal properties of signs and symbols.
syn·tax (sĭn'tăks') *n.* [Fr. *syntaxe* < LLat. *syntaxis* < Gk. *suntaxis* < *suntassein*, to combine : *sun-*, together + *tassein*, to arrange.] 1. a. The way in which terms are combined to form phrases and sentences. b. The branch of grammar dealing with the formation of phrases and sentences. 2. *Computer Sci.* The rules governing the construction of a machine language. —**syn·tac'tic** (-tăk'tĭk), **syn·tac'ti·cal** *adj.* —**syn·tac'ti·cal·ly** *adv.*
syn·the·sis (sĭn'thĭ-sĭs) *n., pl.* **-ses** (-sēz') [Lat. < Gk. *sunthesis* < *sunitithenai*, to put together : *sun-*, together + *tithenai*, to put.] 1. a. Fusion of separate elements or substances to form a coherent whole. b. The whole so formed. 2. *Chem.* Formation of a compound from its constituents. 3. *Philos.* a. Reasoning from the general to the particular : logical deduction. b. The combination of thesis and antithesis in the dialectical process, producing a new and higher form of being. —**syn'the·sist** *n.*
synthesis gas *n.* A synthetic fuel produced by controlled combustion of coal in the presence of water vapor.
syn·the·size (sĭn'thĭ-sīz') *also* **syn·the·tize** (-tīz') *v.* **-sized, -siz·ing, -siz·es** *also* **-tized, -tiz·ing, -tiz·es.** —*vt.* 1. To combine so as to form a new, complex product. 2. To make by combining separate elements. —*vi.* To form a synthesis.
syn·the·siz·er (sĭn'thĭ-sī'zər) *n.* 1. One that synthesizes. 2. A machine having a simple keyboard and using solid-state circuitry to duplicate the sounds of musical instruments, often up to 12 instruments simultaneously.
syn·thet·ic (sĭn-thĕt'ĭk) *also* **syn·thet·i·cal** (-ĭ-kəl) *adj.* [Gk. *sunthetikos*, component < *suntithenai*, to put together. —see SYNTHESIS.] 1. Relating to, involving, or having the nature of a synthesis. 2. *Chem.* Produced by synthesis, esp. not of natural origin : MANMADE. 3. Not genuine : ARTIFICIAL <*synthetic* charm> 4. Describing a language, as Latin or Russian, that uses inflectional affixes to express syntactic relationships. —*n.* **synthetic.** A synthetic chemical compound or material. —**syn·thet'i·cal·ly** *adv.*
synthetic division *n.* A method of dividing a polynomial by another, when the second is of first order, by writing only the coefficients of the terms and changing the sign of the constant term in the divisor.
syn·tro·phism (sĭn-trō'fĭz'əm) *n.* An ecological relationship in which microorganisms are mutually dependent upon one another for nutritional requirements.
syph·er (sĭ'fər) *vt.* **-phered, -pher·ing, -phers.** [Alteration of CIPHER.] To overlap and even (chamfered or beveled plank edges) so as to form a flush surface.
syphil- *pref. var. of* SYPHILO-.
syph·i·lis (sĭf'ə-lĭs) *n.* [NLat., alteration of *Syphilus*, protagonist of a poem by Girolamo Francastoro (1483–1553) in which he is represented as the first victim of the disease.] A chronic infectious venereal disease caused by a spirochete, *Treponema pallidum*, transmitted by direct, usu. sexual contact and progressing through three stages respectively characterized by local formation of chancres, ulcerous skin eruptions, and systemic infection leading to general paresis. —**syph'i·lit'ic** (-lĭt'ĭk) *adj.* & *n.*
syphilo- or **syphil-** *pref.* [< SYPHILIS.] Syphilis <*syphiloma*>
syph·i·loid (sĭf'ə-loid') *adj.* Characteristic of syphilis.
syph·i·lol·o·gy (sĭf'ə-lŏl'ə-jē) *n.* The sum of knowledge concerning the origin, nature, course, complications, and treatment of syphilis. —**syph'i·lol'o·gist** *n.*
syph·i·lo·ma (sĭf'ə-lō'mə) *n., pl.* **-mas** *or* **-ma·ta** (-mə-tə). A lesion formed in an advanced stage of syphilis : GUMMA. —**syph'i·lom'a·tous** (-lŏm'ə-təs) *adj.*
syphon (sī'fən) *n.* & *v. var. of* SIPHON.
Syrette (sĭ-rĕt'). A trademark for a collapsible tube having an attached hypodermic needle containing a single dose of medicine.
Syr·i·ac (sĭr'ē-ăk') *n.* An ancient Aramaic language spoken in Syria from the 3rd to the 13th cent. A.D. that survives as the liturgical language of several eastern Christian churches.
Syr·i·an (sĭr'ē-ən) *adj.* Of or relating to Syria, its people, or its culture. —*n.* 1. A native or inhabitant of Syria. 2. A member of a Christian church using the Syriac language.
sy·rin·ga (sə-rĭng'gə) *n.* [NLat. < Gk. *surinx*, shepherd's pipe (from the use of its hollow stems to make pipes).] MOCK ORANGE 1.
sy·ringe (sə-rĭnj', sĭr'ĭnj) *n.* [ME *syryng* < Med. Lat. *syringa* < Gk. *surinx*, shepherd's pipe.] 1. A medical instrument for injecting fluids into the body or drawing them out of it. 2. A hypodermic syringe.
sy·rin·go·my·e·li·a (sə-rĭng'gō-mī-ē'lē-ə) *n.* [NLat. : Gk. *surinx*, spinal cavity + Gk. *muelos*, marrow < *mus*, muscle, mouse.] A chronic disease of the spinal cord marked by the presence of liquid-filled cavities and leading to spasticity and sensory disturbances.
syr·inx (sĭr'ĭngks) *n., pl.* **sy·rin·ges** (sə-rĭn'jēz', -rĭng'gēz') *or* **syr·inx·es.** [Lat. < Gk. *surinx*.] 1. A panpipe. 2. *Zool.* The vocal organ of a bird, made up of thin vibrating muscles at or near the division of the trachea. —**sy·rin'ge·al** (sə-rĭn'jē-əl) *adj.*
syrphid (sûr'fĭd) *n.* [NLat. *Syrphidae*, family name < Gk. *surphos*, gnat.] Any of numerous flies of the family Syrphidae, many of which have a form or coloration mimicking that of bees or wasps. —*adj.* Of or belonging to the Syrphidae.
syrphus fly (sûr'fəs) *n.* [NLat. *Syrphus*, fly genus < Gk. *surphos*, gnat.] Syrphid.
syr·up *also* **sir·up** (sĭr'əp, sûr'-) *n.* [ME *sirop* < OFr. < Med. Lat. *siropus* < Ar. *sharāb* < *shariba*, he drank.] 1. A thick, sweet, sticky liquid, composed of a sugar base, natural or artificial flavorings, and water. 2. The juice of a fruit or plant boiled with sugar until thick and sticky. —**syr'up·y** *adj.*
sys·sar·co·sis (sĭs'ər-kō'sĭs) *n.* [Gk. *sussarkōsis*, a being overgrown with flesh < *sussarkousthai*, to be overgrown with flesh : *sun-*, with + *sarkousthai*, passive of *sarkoun*, to cover with flesh < *sarx*, flesh.] Union of bones, as the hyoid bone and lower jaw, by muscle.
sys·tal·tic (sĭ-stôl'tĭk, -stăl'-) *adj.* [LLat. *systalticus* < Gk. *sustaltikos* < *sustellein*, to contract : *sun-*, together + *stellein*, to make compact.] Alternately contracting and expanding, as the heart : PULSATING.
sys·tem (sĭs'təm) *n.* [LLat. *systema, systemat-* < Gk. *sustēma* < *sunistanai*, to combine : *sun-*, together + *histanai*, to make stand.] 1. A group of interrelated, interacting, or interdependent constituents forming a complex whole. 2. A functionally related group of elements, esp.: a. The human body regarded as a functional physiological unit. b. A group of physiologically complementary organs or parts <the nervous *system*> c. A group of interacting mechanical or electrical components. d. A network of structures and channels, as for communications, travel, or distribution <a broadcasting *system*><a rail *system*> 3. A structurally or anatomically related group of parts or elements. 4. A set of interrelated ideas or principles. 5. A social, economic, or political organizational form <the capitalist *system*> 6. A naturally occurring group of objects or phenomena <the solar *system*> 7. A set of objects or phenomena grouped together for classification or analysis. 8. Harmonious, orderly interaction. 9. A method : procedure. 10. Organized society : ESTABLISHMENT <You can't beat the *system*.>
sys·tem·at·ic (sĭs'tə-măt'ĭk) *also* **sys·tem·at·i·cal** (-ĭ-kəl) *adj.* 1. Of, marked by, based on, or making up a system. 2. Carried on in a step-by-step procedure. 3. Purposefully regular : METHODICAL. 4. Of or relating to taxonomic classification. —**sys'tem·at'i·cal·ly** *adv.*
sys·tem·at·ics (sĭs'tə-măt'ĭks) *n. (sing. in number).* Classification of organisms into an orderly system indicating natural relationships.
sys·tem·a·tism (sĭs'tə-mə-tĭz'əm, sĭ-stĕm'ə-) *n.* 1. The practice of classifying or systematizing. 2. Adherence to a system.
sys·tem·a·tist (sĭs'tə-mə-tĭst, sĭ-stĕm'ə-) *n.* 1. One who formulates or adheres to a system. 2. A taxonomist.
sys·tem·a·tize (sĭs'tə-mə-tīz') *vt.* **-tized, -tiz·ing, -tiz·es.** To formulate into or reduce to a system <amass and *systematize* knowledge> —**sys'tem·a·ti·za'tion** *n.* —**sys'tem·a·tiz'er** *n.*
sys·tem·ic (sĭ-stĕm'ĭk) *adj.* 1. Of or relating to a system. 2. Of, relating to, or affecting the entire body. —**sys·tem'i·cal·ly** *adv.*
sys·tem·ize (sĭs'tə-mīz') *vt.* **-ized, -iz·ing, -iz·es.** To systematize. —**sys'tem·i·za'tion** *n.* —**sys'tem·iz'er** *n.*

"Daniel" Several more of the pumps had a pony (2½") inlet. 8/8/06 5-25

rain for rent

Questions, contact us at info@rainforrent.com or call 1-800-742-7246

Rain for Rent Pump Fleet

For More Information on Pumps, See Pump Training and check out our Pump Testing Facility

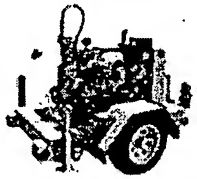
All Rain for Rent pumps have an end suction centrifugal pump with a fully automatic priming system incorporated into the design. This enables the pump to self-prime from completely dry conditions, even with extended suction lines. Liquid is not required to prime the pump, and therefore, in temporary dry conditions, the pump will 'snore' until such time as liquid is available

Power Prime Pumps

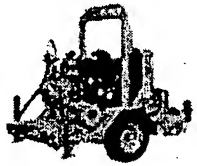
Interested in Renting one of these Pumps?

DV-80
Size is 3" x 3"
500 GPM maximum
138 FT Head maximum

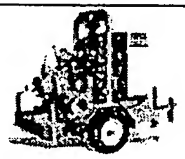
DV-80M
Size 3" X 3"
600 GPM Max
95 Ft Head Max



DV-100
Size is 4" x 4"
800 GPM maximum
115 FT Head maximum



DV-150
Size is 6" x 6"
2250 GPM maximum
160 FT Head maximum

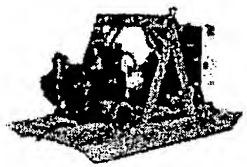


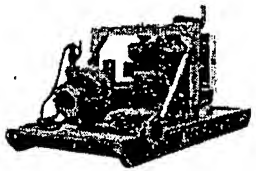
DV-200
Size is 8" x 8"
3100 GPM maximum
152 FT Head maximum

DV-200c
SIZE 8"x8"
4,500 GPM MAX
255 FT HEAD MAX
81% Hydraulic Efficiency

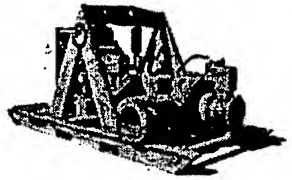
DV-300
Size is 12" x 10"
5000 GPM maximum
100 FT Head maximum

DV-300i
Size 12" x 12"
6,900 GPM max
197 ft head max

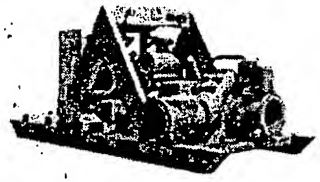




DV-350
Size 14" X 14"
8,000 GPM Max
100 Ft Head Max

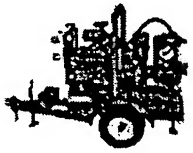


DV-350c
Size 14" x 14"
13,500 GPM MAX
180 FT. HEAD MAX



DV-400
Size 18" X 16"
16,000 GPM Max
200 Ft. Head Max

VMX-150
Size 6" X 6"
2,300 GPM Max
160 Ft Head Max

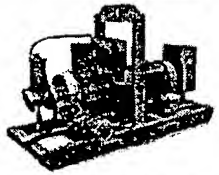


VP-150
Size is 8" x 6"
2250 GPM
maximum
110 FT Head
maximum

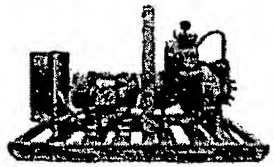
VP-500
Size is 24" x 20
22000 GPM maximum
123 FT Head maximum

Electric & Recessed Pumps

DV-100 Electric
Size is 4" x 4"
680 GPM maximum
72 FT Head maximum

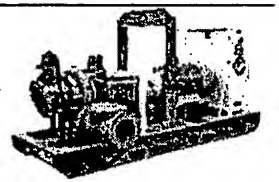


DV-150 Electric
Size is 6" x 6"
2000 GPM maximum
100 FT Head maximum



DV-200 Electric
Size 8" X 8"
2750 GPM Max
128 Ft Head Max

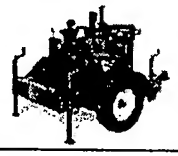
DV-300 Electric
Size is 12" x 10"
5000 GPM maximum
115 FT Head maximum



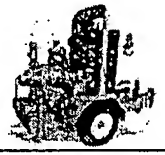
DV-100 Recessed

DV-150 Recessed

Size is 4" x 4"
800 GPM maximum
70 FT Head maximum

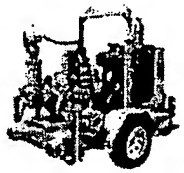


Size is 6" x 6"
2600 GPM maximum
75 FT Head maximum



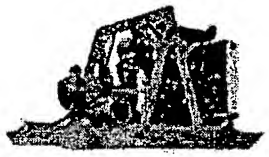
High Head Pumps

HH-80 3 x 3
Size is 3" x 3"
450 GPM maximum
300 FT Head maximum

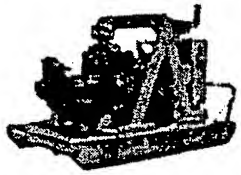


HH-125 6 x 4
Size is 6" x 4"
800 GPM maximum
370 FT Head maximum

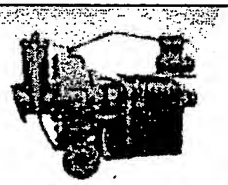
HH-150 8 x 6
Size is 8" x 6"
2250 GPM maximum
320 FT Head maximum



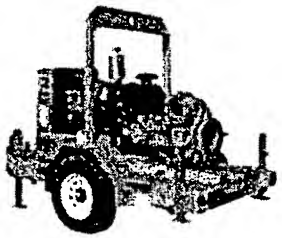
HH-200i
Size 8" X 8"
4,500 GPM Max
450 Ft Head Max



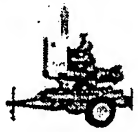
XH-100 6 x 4
Size 6" X 4"
1,250 GPM Max
605 Ft Head Max



XH-150 8 x 6
Size 8" X 6"
2,400 GPM Max
605 Ft Head Max



Cornell RB Series - Medium Head
Flows Up To 4,400 GPM
Up To 370 Ft Head

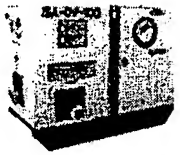


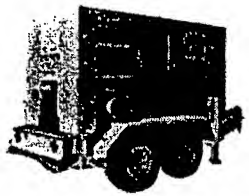
Cornell H Series - High Head
Flows Up To 1,600 GPM
Up To 475 Ft Head

Sound Attenuated Pumps

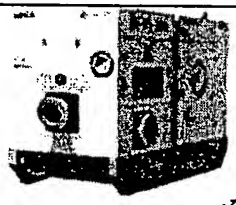
SA-DV-100
SIZE 4" x 4"
800 GPM MAX
115 FT. HEAD MAX

SA-DV-150
Size 6" X 6"
2,250 GPM Max
160 Ft. Head Max

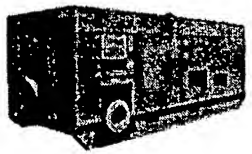




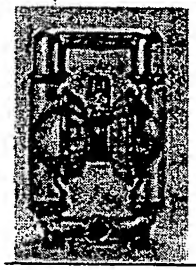
SA-DV-200
Size 8" X 8"
3,100 GPM Max
152 Ft. Head Max



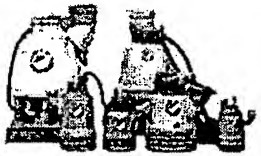
SA-DV-300
Size 12" X 10"
5,000GPM Max
115 Ft. Head Max



Submersibles, Air Compressed, and Others

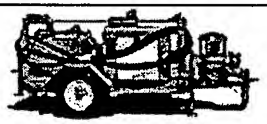


Air Diaphragm
Primarily 2" and 3" units



Flygt Submersible Pumps
Size 3" X 12"
Flows Up To 5,000 GPM
Up To 310 Ft Head

Hydra Tech Hydraulic Submersible Pumps
Size 4" X 6"
Flows Up To 1,600 GPM
Up To 110 Ft Head



HD-150 6 Hydraulic Submersible
Size is 6"
2000 GPM maximum
108 FT Head maximum

TISSUE PAPER

NFPA 1901

Standard for Automotive Fire Apparatus

2003 Edition

NFPA, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

16.6.10 If the suction inlets are to be equipped with a valve, siamese, or adapter that will remain in place while the apparatus is in motion, that valve, siamese, or adapter shall not project beyond the apparatus running board.

16.6.11 The purchaser shall specify if any valve, siamese, or adapter is to be permanently installed on an intake and identify the brand and model of such item.

16.7* Pump Discharge Outlets.

16.7.1* Discharge outlets of 2½ in. (65 mm) or larger shall be provided to discharge the rated capacity of the pump at the flow rates shown in Table 16.7.1.

Table 16.7.1 Discharge Rates by Outlet Size

Outlet Size		Flow Rates	
in.	mm	gpm	L/min
2½	65	250	1000
3	75	375	1400
3½	90	500	2000
4	100	625	2400
4½	110	750	3000
5	125	1000	4000
6	150	1440	5500

16.7.1.1 If the apparatus is equipped with an aerial device with a waterway that is permanently connected to the pump, the discharge from that waterway shall be permitted to be credited as a 1000 gpm (4000 L/min) outlet.

16.7.1.2 A minimum of two 2½ in. (65 mm) outlets shall be provided on any pump rated at 750 gpm (3000 L/min) or greater, and a minimum of one 2½ in. (65 mm) outlet shall be provided on any pump rated at less than 750 gpm (3000 L/min).

16.7.2 Discharge Outlet Connections.

16.7.2.1 All 2½ in. (65 mm) or larger discharge outlets shall be equipped with male National Hose threads.

16.7.2.2* Adapter couplings with special threads or other means for hose attachment shall be permitted to be furnished on any or all outlets.

16.7.3* The piping and valves supplying any preconnected 1½ in. (38 mm), 1¾ in. (45 mm), or 2 in. (52 mm) hose line, including the piping to the preconnected hose storage areas specified in Section 5.6(2), Section 6.5(2), 7.5.2, 8.6.2, Section 9.6(2), or Section 11.7(2), as applicable, shall be at least 2 in. (52 mm) in size.

16.7.4 All discharge outlets, except outlets to which a hose will be preconnected, shall be equipped with caps or closures capable of withstanding a minimum hydrostatic burst gauge pressure of 100 psi (700 kPa) over the maximum pump close-off pressure or 500 psi (3400 kPa), whichever is greater.

16.7.4.1 Where adapters are provided on the discharge outlets, the closures shall fit on the adapters.

16.7.4.2 Caps or closures for outlets 3½ in. (90 mm) and smaller in size shall be removable from the outlet but remain secured to the apparatus.

16.7.5 Each discharge outlet shall be equipped with a valve that can be opened and closed smoothly at the flows shown in Table 16.7.1 at pump discharge gauge pressures of 250 psi (1700 kPa).

16.7.5.1 The flow-regulating element of each valve shall not change its position under any condition of operation that involves discharge pressures to the maximum pressure of the pump; the means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually or automatically controlled.

16.7.5.2* Any 3 in. (75 mm) or larger discharge valve shall be a slow-operating valve.

16.7.6 All 1½ in. (38 mm) or larger discharge outlets shall be equipped with a drain or bleeder valve having a minimum ¾ in. (19 mm) pipe thread connection for draining or bleeding off pressure from a hose connected to the outlet.

16.7.7 Any 2 in. (52 mm) or larger discharge outlet that is located more than 42 in. (1070 mm) off the ground to which hose is to be connected and that is not in a hose storage area shall be supplied with a sweep elbow of at least 30 degrees downward.

16.7.8 Valves.

16.7.8.1 Each pump discharge shall have a valve that can be controlled from the pump operator's position.

16.7.8.2 A secondary valve shall be permitted to be provided at a discharge outlet if required for special applications.

16.7.9* Location of Discharge Outlets.

16.7.9.1 No discharge outlet larger than 2½ in. (65 mm) shall be located at the pump operator's panel.

16.7.9.2 If the apparatus has a top console–type pump operator's panel, vertical discharge outlets larger than 2½ in. (65 mm) shall be permitted at the top midship position of apparatus where the outlets are used for directly connected deck guns or monitors and no fire hose is used for coupling the components.

16.7.10 Where the valve-operating mechanism does not indicate the position of the valve, an indicator shall be provided to show when the valve is closed.

16.8 Pump Drains.

16.8.1 A readily accessible drain valve(s) that is marked with a label as to its function shall be provided to allow for draining of the pump and all water-carrying lines and accessories.

16.8.2 The drain valve(s) shall be operational without the operator having to get under the apparatus.

16.9 Pump Operator's Panel.

16.9.1* Each pump control, gauge, and other instrument necessary to operate the pump shall be located on a panel known as the pump operator's panel and shall be marked with a label as to its function.

16.9.2 All gauges, discharge outlets, pump intakes, and controls shall be illuminated to a minimum lighting level of 5 fc (50 lx).

16.10* Pump Controls.

16.10.1 **General Provisions.** Provisions shall be made for placing the pump drive system in operation using controls and switches that are identified and within convenient reach of the operator.

16.5 Construction Requirements.

16.5.1* Wetted moving parts shall be constructed of a corrosion-resistant material.

16.5.2 Hydrostatic Test.

16.5.2.1 The pump body shall be subjected to a hydrostatic test to a gauge pressure of 500 psi (3400 kPa) minimum for 10 minutes.

16.5.2.2 The pump manufacturer shall provide a certificate of completion for the hydrostatic test.

16.5.3 Where an auxiliary pump is provided in combination with a fire pump and where the pumps are interconnected so that pressure from one pump can be transmitted to the other pump, check valves, intake or discharge relief valves, pump drive gear ratios, or other automatic means shall be provided to avoid pressurizing either pump beyond its maximum rated hydrostatic pressure.

16.5.4 The entire discharge and intake piping system, valves, drain cocks and lines, and intake and outlet closures, excluding the tank fill and tank-to-pump lines on the tank side of the valves in those lines, shall be capable of withstanding a minimum hydrostatic burst gauge pressure of 500 psi (3400 kPa).

16.5.5 Pulsation-Free Fire Streams.

16.5.5.1 The pump shall be capable of producing fire streams that are free from pulsations.

16.5.5.2 When an accumulator is used to provide pulsation-free fire streams, the accumulator shall be constructed and tested in accordance with the ASME *Boiler and Pressure Vessel Code*, Section VIII, Division 2.

16.5.6 The pump shall allow a positive pressure water source to directly add to the pump's net pump pressure.

16.6 Pump Intake Connections.

16.6.1* The pump shall have at least the number of intake(s) required to match one of the arrangements shown in Table 16.2.4.1(a) for the rated capacity of the pump, and the required intakes shall be at least equal in size to the size of the suction lines for that arrangement.

16.6.1.1 The intakes specified in 16.6.1 shall have male National Hose threads if the apparatus is to be used in the United States.

16.6.1.2 If the couplings on the suction hose carried on the apparatus are of a different size than the pump intake(s) or have means of hose attachment other than that provided on the intake(s), an adapter(s) shall be provided to allow connection of the suction hose to the pump intake(s).

16.6.1.3* A sign shall be provided on the pump operator's panel that states the following:

> WARNING: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

16.6.2 Intake Strainer.

16.6.2.1 Each intake shall have a removable or accessible strainer inside the connection.

16.6.2.2* The strainer(s) shall restrict spherical debris that is too large to pass through the pump.

16.6.3 At least one valved intake shall be provided that can be controlled from the pump operator's position.

16.6.3.1 The valve and piping shall be a minimum 2½ in. (65 mm) nominal size.

16.6.3.2 If the intake is 2½ in. (65 mm) nominal size, the intake shall be equipped with a female swivel coupling with National Hose threads.

16.6.4 Any 3 in. (75 m) or larger intake valve except the tank-to-pump intake valve shall be a slow-operating valve.

16.6.5* Each valved intake shall be equipped with a bleeder valve having a minimum ¾ in. (19 mm) pipe thread connection to bleed off air or water.

16.6.5.1 The bleeder valve shall be operational without the operator having to get under the apparatus.

16.6.5.2 If a valved appliance is attached to an intake, it shall be equipped with a ¾ in. (19 mm) bleeder valve on each intake.

16.6.6 Each valved intake having a connection size of 3½ in. (90 mm) or larger shall be equipped with an adjustable automatic pressure relief device installed on the supply side of the valve to bleed off pressure from a hose connected to the valved intake.

16.6.6.1 The pressure relief device shall discharge to atmosphere, and the discharge shall be piped or directed away from the pump operator's position.

16.6.6.2 The automatic pressure relief device shall be adjustable from a minimum of 90 psi (620 kPa) to at least 185 psi (1275 kPa).

16.6.6.3 The pressure relief device, when preset at 125 psi (860 kPa), shall not allow a pressure rise greater than 60 psi (400 kPa) at the device inlet while flowing a minimum of 150 gpm (570 L/min).

16.6.7 If the pump is equipped with one or more intakes larger than 3½ in. (89 mm) that are not valved, an adjustable automatic pressure relief device shall be installed on the pump system to bleed off excess pressure from a hose connected to the pump intake.

16.6.7.1 The automatic pressure relief device shall be adjustable from a minimum of 90 psi (620 kPa) to at least 185 psi (1275 kPa).

16.6.7.2 The pressure relief device, when preset at 125 psi (860 kPa), shall not allow a pressure rise greater than 60 psi (400 kPa) at the device inlet while flowing a minimum of 150 gpm (570 L/min).

16.6.7.3 The pressure relief device shall discharge to atmosphere.

16.6.8 All intakes shall be provided with caps or closures capable of withstanding a hydrostatic burst gauge pressure of 500 psi (3400 kPa).

16.6.8.1 Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs.

16.6.8.2 Where adapters for special threads or other means for hose attachment are provided on the intakes, closures shall be provided for the adapters in lieu of caps or plugs.

16.6.9 Caps or closures for 3½ in. (90 mm) and smaller intakes shall be removable from the intakes but remain secured to the apparatus.